

## NP3151W Installation Guide

### Desktop and Ceiling Mount

v 1.0

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#### Product Description

Type:	3 panel LCD projector, 0.74 p-Si TFT w/MLA	Dimensions:	15.7"(W) x 5.9"(H) x 14.1"(D)
Resolution:	1280 x 800 (16:10) / 1067 x 800 (4:3)	Weight:	16.1 lbs
Fan Noise:	38 dB / 31dB @ 1 meter	Brightness:	NP3151W – 4000 Lumens
Power Consumption:	490W (max)	BTU's:	1672 BTU/hour
Network Ready, integrated wired and wireless adapter		Manual:	Lens Shift, Horizontal & Vertical /Zoom/ Focus

#### Lens Specifications

<b>NP01FL:</b> Throw Ratio: ~ 0.8:1	Focal Length: 13.2mm
Screen Sizes: 38"-143"	F/#:2.3
<b>NP02FL:</b> Throw Ratio: 1.18 - 1.54:1	Focal Length: 19.42 - 25.26mm
Screen Sizes: 29" - 476"	F/#:2.2
<b>Standard:</b> Throw Ratio: 1.5 - 2.0:1	Focal Length: 24.4 - 32.5mm
Screen Sizes: 29" – 476 "	F/#:1.7
<b>NP03FL:</b> Throw Ratio: 1.94 - 3.07:1	Focal Length: 31.6 – 50.2mm
Screen Sizes: 38" - 476"	F/#:2.2
<b>NP04FL:</b> Throw Ratio: 2.98 -4.77:1	Focal Length: 48.8 - 77.6mm
Screen Sizes: 57" - 476"	F/#:2.2
<b>NP05FL:</b> Throw Ratio: 4.62 - 7.02:1	Focal Length: 76.6 - 116.5mm
Screen Sizes: 57" - 476"	F/#:2.2

#### Screen/Aspect Ratio

**16:10, 16:9 and 4:3 screens are fully supported** with proper aspect ratio control for both type sources using NEC developed scaling technology. Menu selections have settings for each screen type and aspect ratio control for each source type.

#### Notes

- For screen sizes not indicated on the projection tables, use the formulas below.  
If the figures on the tables do not match the results of formulas, use the figures in the table.
- All calculations are based on 4:3 aspect ratio.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary ±5%.

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**Formulas**

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 16:10 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:10 screens:

**Projection Formulas:**

<b>NP01FL:</b>	$C = 0.8260W - 1.33$
<b>NP02ZL:</b>	$C(\text{Wide}) = 1.2120W - 1.798 \quad C(\text{Tele}) = 1.5770W - 1.795$
<b>Standard:</b>	$C(\text{Wide}) = 1.5330W - 2.022 \quad C(\text{Tele}) = 2.0390W - 2.015$
<b>NP03ZL:</b>	$C(\text{Wide}) = 1.9910W - 2.830 \quad C(\text{Tele}) = 3.1460W - 2.840$
<b>NP04ZL:</b>	$C(\text{Wide}) = 3.0300W - 4.830 \quad C(\text{Tele}) = 4.8465W - 4.850$
<b>NP05ZL:</b>	$C(\text{Wide}) = 4.7888W - 7.625 \quad C(\text{Tele}) = 7.2779W - 7.645$

**Definitions:**

W = Image Width
H = Image Height (size)
C = Throw distance
<b>16:10 Screen Formulas:</b>
$W = H \times 16/10$
$H = W \times 10/16$
Screen Diagonal = $W \times 18.868/16$

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

**Distance Chart for popular 16:10 screens**

Image Size (16:10) on a (16:10) screen			Rear Lens	Zoom Lenses				
Diagonal inches	Width(W) inches	Height (H) inches	NP01FL	Standard	NP02ZL	NP03ZL	NP04ZL	NP05ZL
85	72	45	58	108 - 145	85 - 112	141 - 224	213 - 344	337 - 516
92	78	49	63	118 - 158	93 - 122	153 - 244	233 - 375	368 - 563
98	83	52	67	126 - 168	99 - 129	163 - 259	247 - 398	391 - 598
102	86	54	70	130 - 174	103 - 134	169 - 269	257 - 414	406 - 621
111	94	59	76	142 - 190	112 - 147	184 - 293	280 - 451	443 - 677
113	96	60	78	145 - 194	115 - 150	188 - 299	286 - 460	452 - 691
123	104	65	85	157 - 210	124 - 162	204 - 324	310 - 499	490 - 749
125	106	66	86	160 - 213	126 - 165	207 - 329	315 - 507	498 - 761
147	125	78	NA	189 - 252	149 - 195	246 - 390	373 - 600	590 - 901
149	126	79	NA	192 - 256	151 - 198	249 - 395	378 - 608	598 - 912
213	181	113	NA	275 - 367	217 - 283	357 - 566	543 - 871	858 - 1308
255	216	135	NA	329 - 438	260 - 339	427 - 677	650 - 1042	1027 - 1564
340	288	180	NA	439 - 585	347 - 452	571 - 903	868 - 1391	1372 - 2088
425	360	225	NA	550 - 732	435 - 566	714 - 1130	1086 - 1740	1716 - 2612

**Note:** For screen sizes not indicated on the projection tables, use the formulas on page above.

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**Formulas**

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 16:10 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

**Projection Formulas:**

<b>NP01FL:</b>	$C = 0.7426W - 1.33$
<b>NP02ZL:</b>	$C(\text{Wide}) = 1.0885W - 1.798 \quad C(\text{Tele}) = 1.4225W - 1.795$
<b>Standard:</b>	$C(\text{Wide}) = 1.3743W - 2.022 \quad C(\text{Tele}) = 1.8319W - 2.015$
<b>NP03ZL:</b>	$C(\text{Wide}) = 1.7992W - 2.830 \quad C(\text{Tele}) = 2.8325W - 2.840$
<b>NP04ZL:</b>	$C(\text{Wide}) = 2.7275W - 4.830 \quad C(\text{Tele}) = 4.3620W - 4.850$
<b>NP05ZL:</b>	$C(\text{Wide}) = 4.3259W - 7.625 \quad C(\text{Tele}) = 6.5228W - 7.645$

**Definitions:**

W = Image Width
H = Image Height (size)
C = Throw distance

**16:9 Screen Formulas:**

W = H x 16/9
H = W x 9/16
Screen Diagonal = W x 18.358/16

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

**Distance Chart for popular 16:10 images on a 16:9 screen**

Screen Size (16:9)			Image Size (16:10) on a (16:9) screen			Rear Lens	Zoom Lenses				
Diagonal inches	Width(H) inches	Height (V) inches	Diagonal inches	Width(W) inches	Height (H) inches	0.8:1	1.5 - 2.0:1	1.18 - 1.54:1	1.94 - 3.07:1	2.98 - 4.77:1	4.62 - 7.02:1
92	80	45	85	72	45	58	108 - 145	85 - 112	141 - 224	213 - 344	337 - 516
100	87	49	92	78	49	63	118 - 158	93 - 122	153 - 244	233 - 375	368 - 563
106	92	52	98	83	52	67	126 - 168	99 - 129	163 - 259	247 - 398	391 - 598
110	96	54	102	86	54	70	130 - 174	103 - 134	169 - 269	257 - 414	406 - 621
119	104	59	111	94	59	76	142 - 190	112 - 147	184 - 293	280 - 451	443 - 677
123	107	60	113	96	60	78	145 - 194	115 - 150	188 - 299	286 - 460	452 - 691
133	116	65	123	104	65	85	157 - 210	124 - 162	204 - 324	310 - 499	490 - 749
135	118	66	125	106	66	86	160 - 213	126 - 165	207 - 329	315 - 507	498 - 761
159	139	78	147	125	78	NA	189 - 252	149 - 195	246 - 390	373 - 600	590 - 901
161	140	79	149	126	79	NA	192 - 256	151 - 198	249 - 395	378 - 608	598 - 912
229	200	113	213	181	113	NA	275 - 367	217 - 283	357 - 566	543 - 871	858 - 1308
275	240	135	255	216	135	NA	329 - 438	260 - 339	427 - 677	650 - 1042	1027 - 1564
367	320	180	340	288	180	NA	439 - 585	347 - 452	571 - 903	868 - 1391	1372 - 2088
459	400	225	425	360	225	NA	550 - 732	435 - 566	714 - 1130	1086 - 1740	1716 - 2612
490	427	240	453	384	240	NA	587 - 781	464 - 604	762 - 1205	1159 - 1856	1831 - 2787

**Note:** For screen sizes not indicated on the projection tables, use the formulas on page above.

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**Formulas**

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 4:3 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

**Projection Formulas:**

<b>NP01FL:</b>	$C = 0.995W - 1.33$
<b>NP02ZL:</b>	$C(\text{Wide}) = 1.453W - 1.798 \quad C(\text{Tele}) = 1.895W - 1.795$
<b>Standard:</b>	$C(\text{Wide}) = 1.838W - 2.022 \quad C(\text{Tele}) = 2.447W - 2.015$
<b>NP03ZL:</b>	$C(\text{Wide}) = 2.389W - 2.830 \quad C(\text{Tele}) = 3.775W - 2.840$
<b>NP04ZL:</b>	$C(\text{Wide}) = 3.632W - 4.830 \quad C(\text{Tele}) = 5.815W - 4.850$
<b>NP05ZL:</b>	$C(\text{Wide}) = 5.747W - 7.625 \quad C(\text{Tele}) = 8.732W - 7.645$

**Definitions:**

W = Image Width  
H = Image Height (size)  
C = Throw distance

**4:3 Screen Formulas:**

W = H x 4/3  
H = W x 4/3  
Screen Diagonal = W x 5/4

**Note:** Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

**Distance Chart for popular 4:3 aspect ratios on a 16:9 screen**

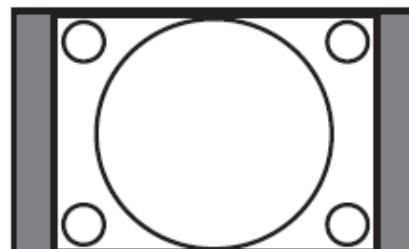
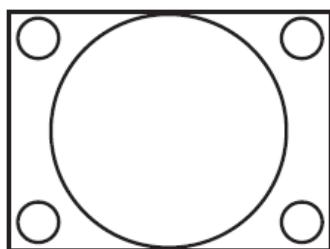
Screen Size (16:9)			Screen Size (4:3)			Rear Lens	Zoom Lenses					
Diagonal	Width(H)	Height (V)	Diagonal	Width(H)	Height (V)	0.8:1	1.5 - 2.0:1	1.18 - 1.54:1	1.94 - 3.07:1	2.98 - 4.77:1	4.62 - 7.02:1	
inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	
49	43	24	40	32	24	30	57	- 76	45	- 59	74	- 118
73	64	36	60	48	36	46	86	- 115	68	- 89	112	- 178
92	80	45	75	60	45	58	108	- 145	85	- 112	141	- 224
100	87	49	82	65	49	63	118	- 158	93	- 122	153	- 244
106	92	52	87	69	52	67	126	- 168	99	- 130	163	- 259
110	96	54	90	72	54	70	130	- 174	103	- 134	169	- 269
120	105	59	98	78	59	76	142	- 190	112	- 147	185	- 293
122	107	60	100	80	60	78	145	- 194	114	- 150	188	- 299
133	116	65	108	87	65	85	157	- 210	124	- 162	204	- 324
135	117	66	110	88	66	86	160	- 213	126	- 165	207	- 329
159	139	78	130	104	78	NA	189	- 252	149	- 195	246	- 390
161	140	79	132	105	79	NA	192	- 256	151	- 198	249	- 395
230	201	113	188	151	113	NA	275	- 367	217	- 284	357	- 566
275	240	135	225	180	135	NA	329	- 438	260	- 339	427	- 677
367	320	180	300	240	180	NA	439	- 585	347	- 452	571	- 903
459	400	225	375	300	225	NA	550	- 732	435	- 566	714	- 1130
490	427	240	400	320	240	NA	587	- 781	464	- 604	762	- 1205

**Note:** For screen sizes not indicated on the projection tables, use the formulas on page above.

Input Signal Aspect Ratio

4:3 image on a 16:9 screen

4:3



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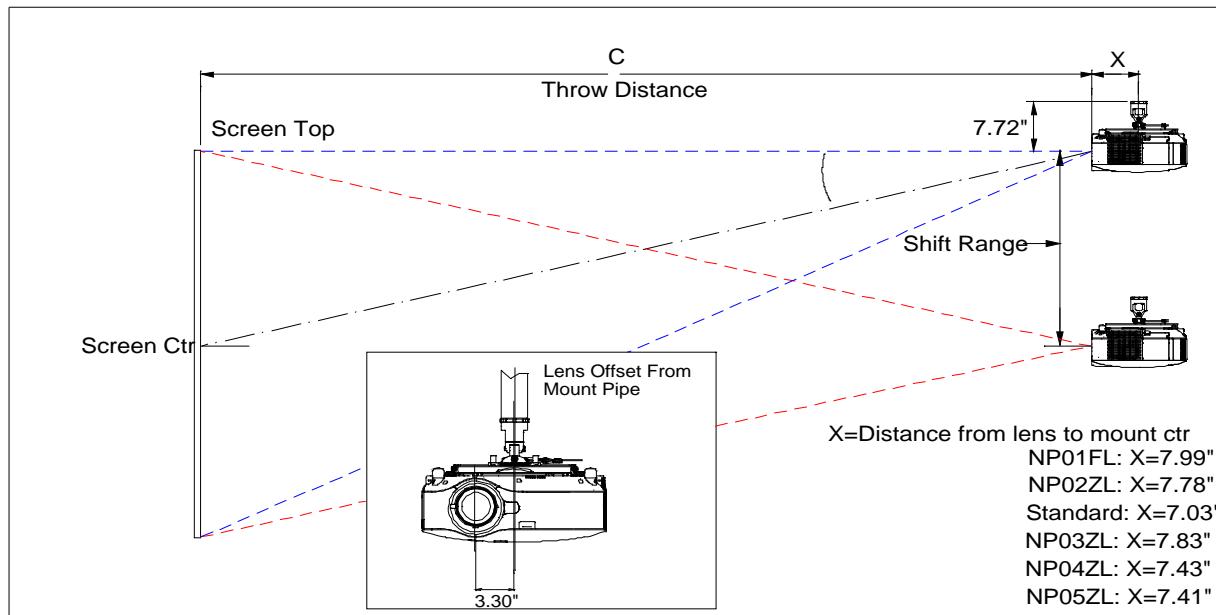
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#### Projection Distance and Screen Size for Ceiling Mount and Desktop

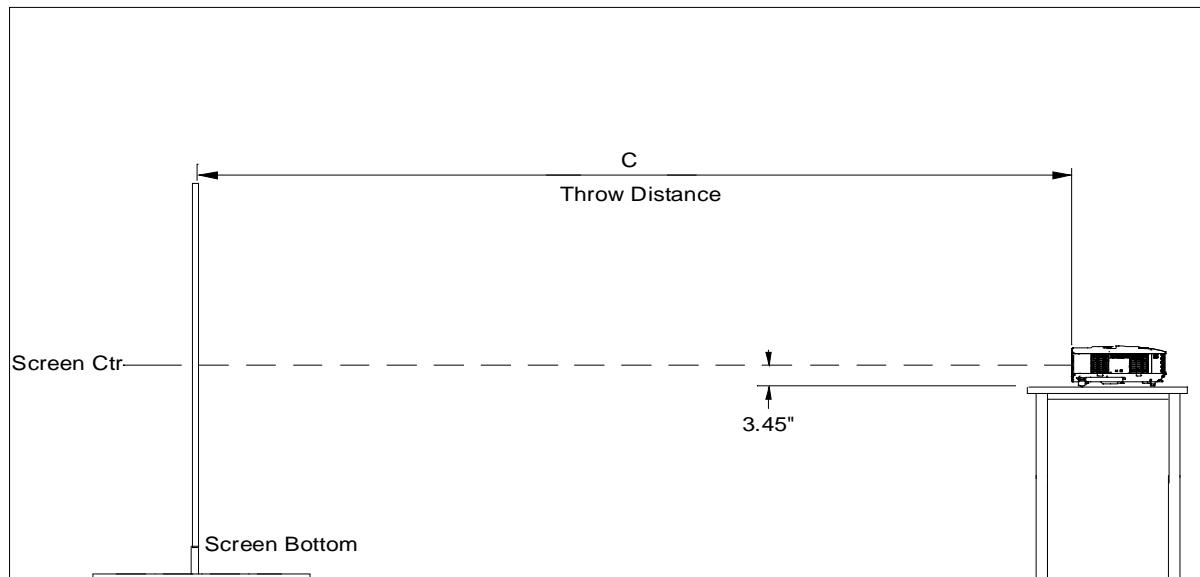
The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation.

Distances are in inches. For millimeters multiply by 25.4.

#### Ceiling Mount Installation



#### Rear Projection Desktop Installation



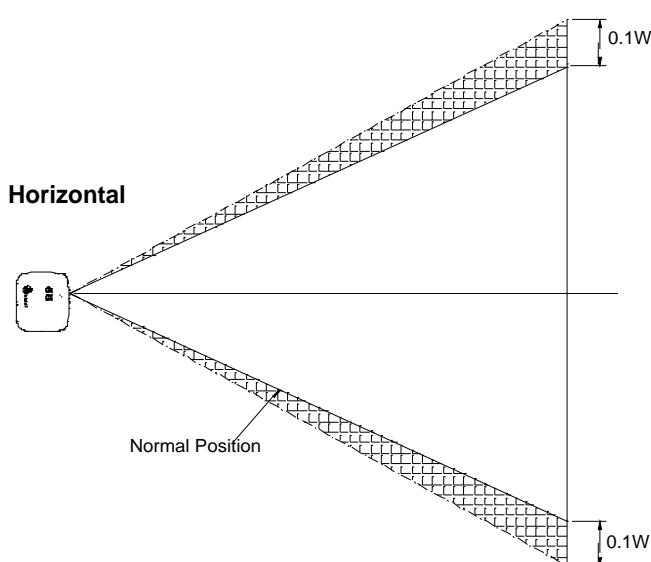
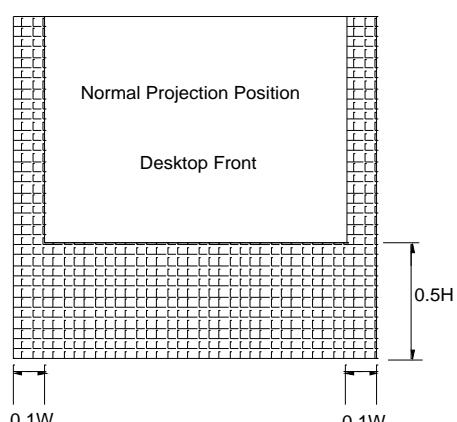
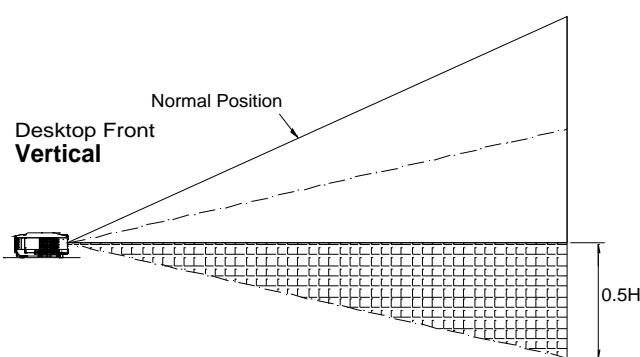
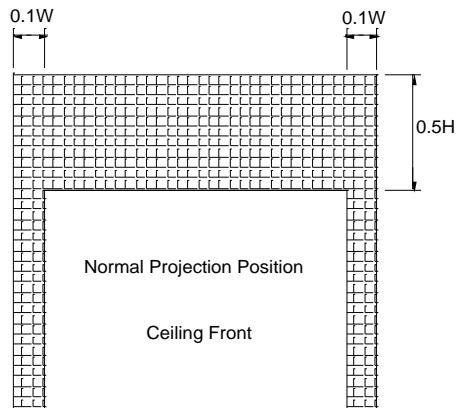
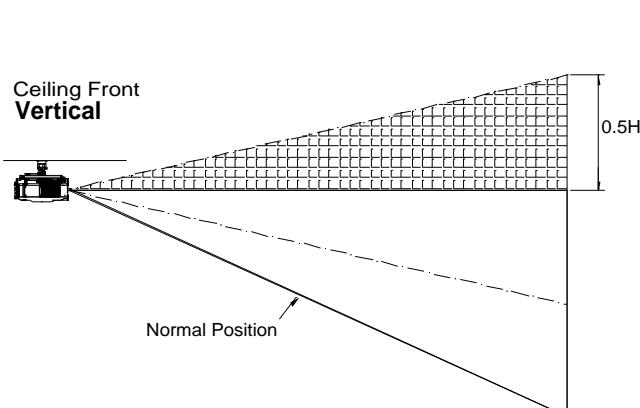
**Note:** Lens shift feature is not available with NP01FL (rear lens). NP01FL should be used only for "zero degree" / "no-offset" applications.

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### Lens Shift Adjustable Range



### Lens Shift Range for Desktop and Ceiling Mount Application

The diagram below shows the location of the image position in the lens. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.

**Note:** Lens shift feature is not available with NP01FL (rear lens). NP01FL should be used only for "zero degree" / "no-offset" applications.

### Maximum Possible Range for Standard Lens/NP02ZL/NP03ZL/NP04ZL/NP05ZL:

Up: 0.5V  
Right: 0.10H  
Left: 0.10H

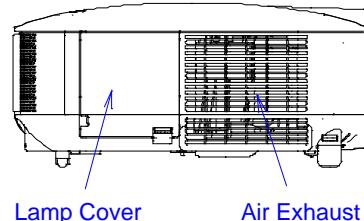
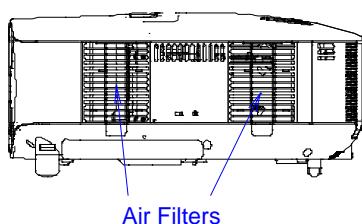
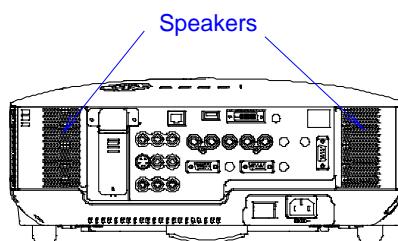
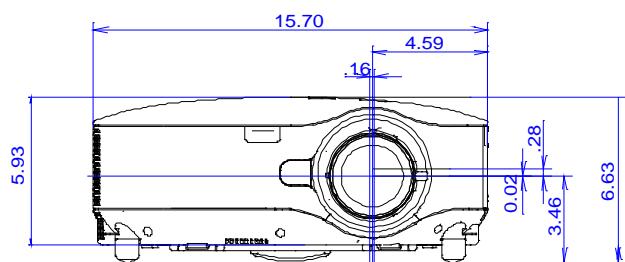
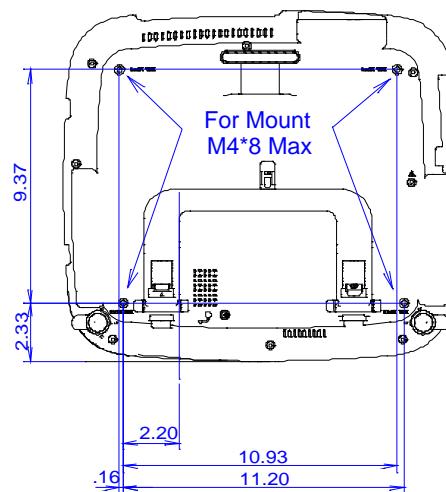
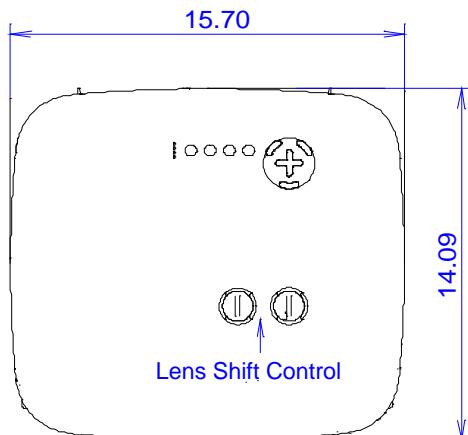
(H: width of projected image, V: height of projected image)

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**Cabinet Dimensions**

The following diagrams show the cabinet dimensions for the NP3151. Dimensions are in inches. For millimeters multiply by 25.4.



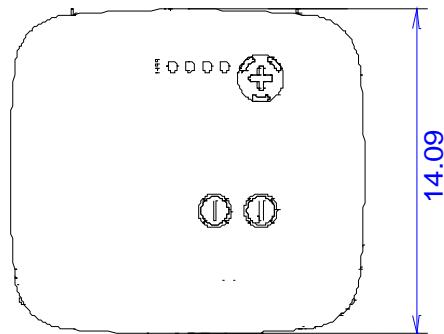
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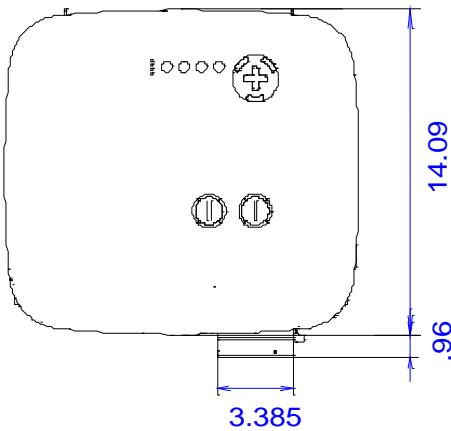
**Lens Dimensions**

The following drawings show the added dimensions for the optional lenses  
Dimensions are in inches. For millimeters multiply by 25.4.

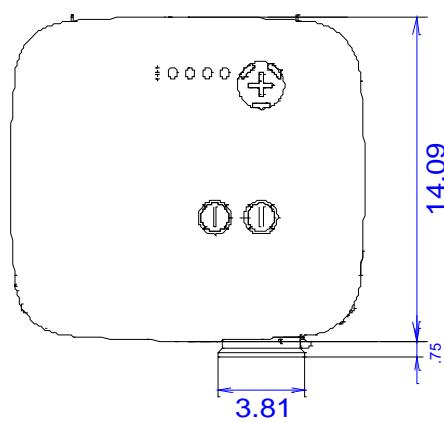
NP w Standard Lens



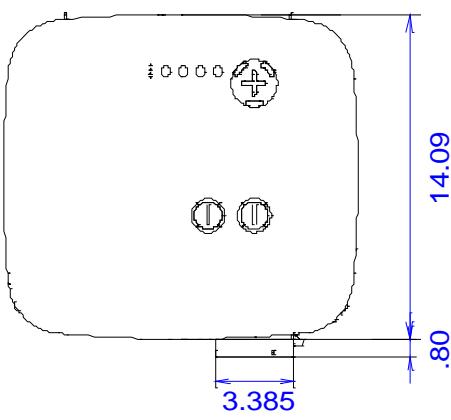
NP01FL



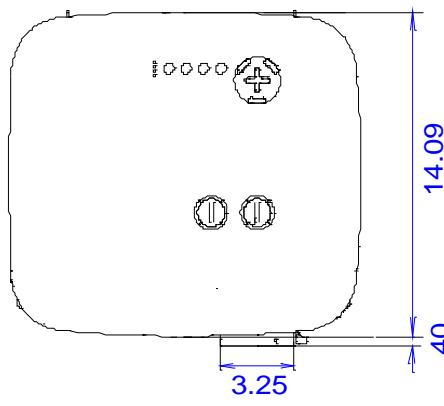
NP02ZL



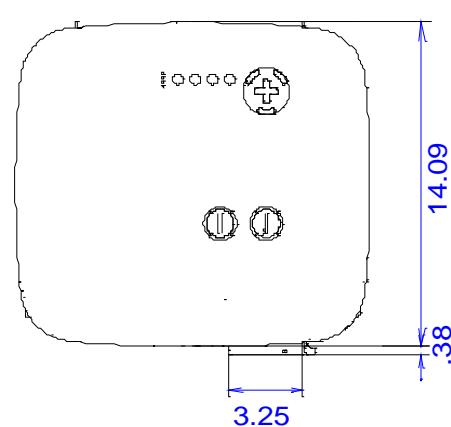
NP03ZL



NP04ZL



NP05ZL

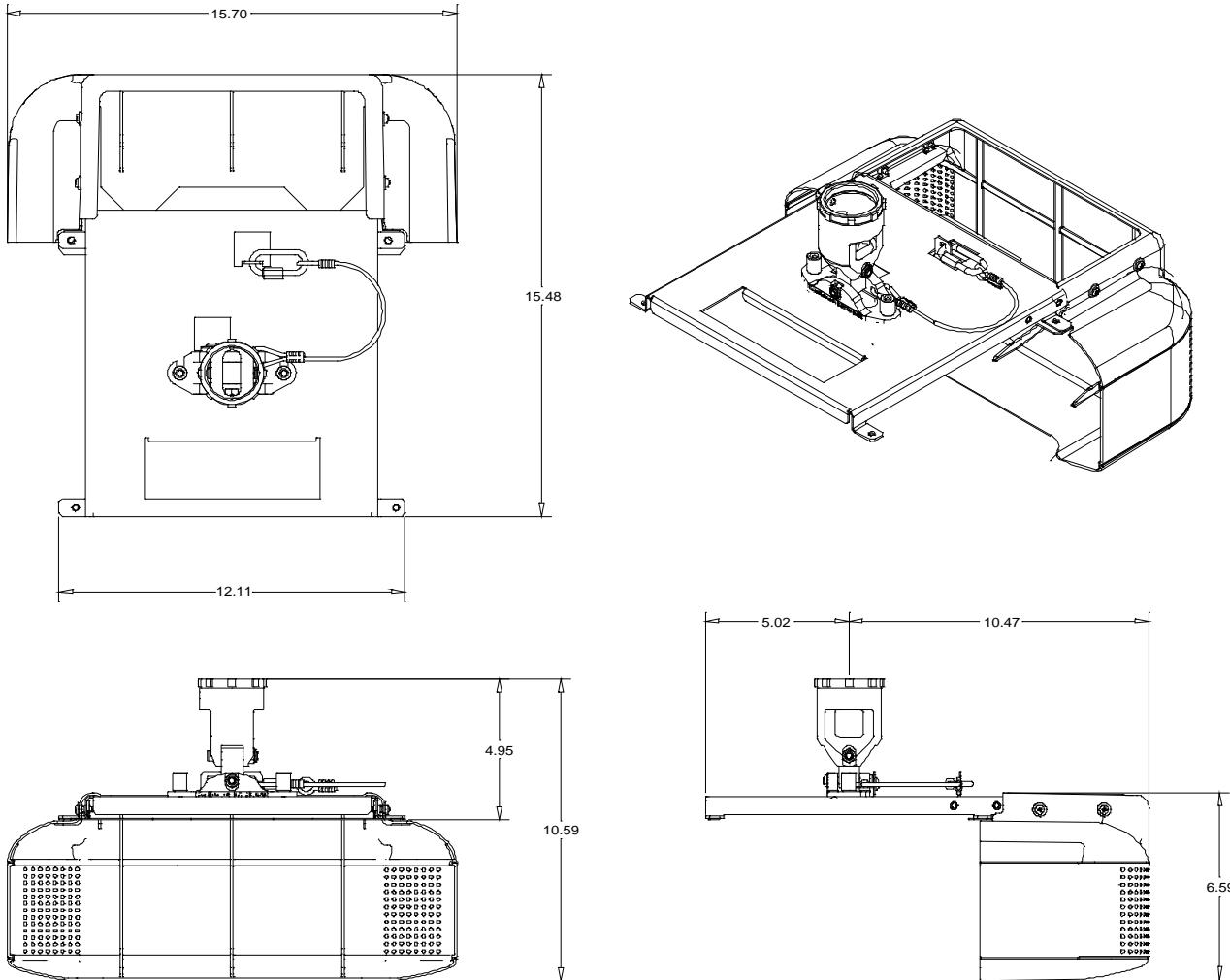


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**Optional Ceiling Mount Dimensions (Model #: NP1000CM)**

The following diagrams show ceiling mount dimensions for the NP3151.  
Dimensions are in inches. For millimeters multiply by 25.4.

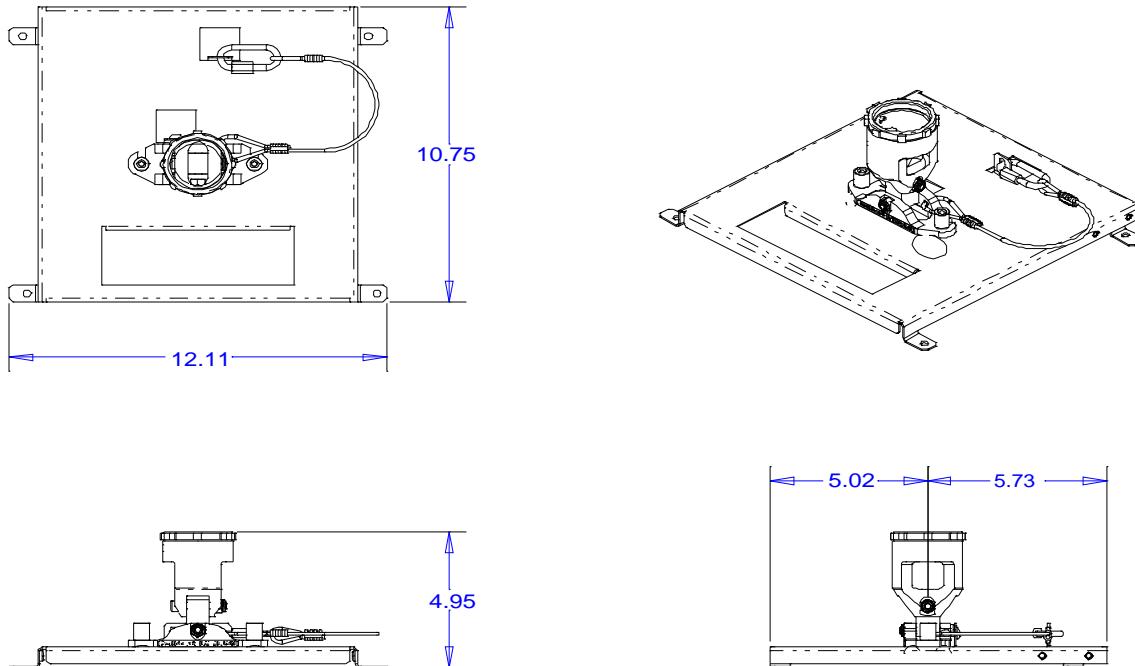
**POLE MOUNT WITH I/O COVER**

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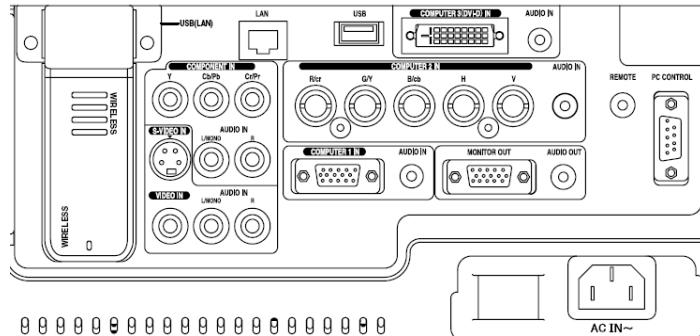
**Optional Ceiling Mount Dimensions (Model #: NP1000CM) (continued)**

The following diagrams show ceiling mount dimensions for the NP3151.  
Dimensions are in inches. For millimeters multiply by 25.4.

**POLE MOUNT W/O I/O COVER**

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**PC Control Codes**

Function	Code Data											
POWER ON	02H	00H	00H	00H	00H	02H						
POWER OFF	02H	01H	00H	00H	00H	03H						
INPUT SELECT COMPUTER 1	02H	03H	00H	00H	02H	01H	01H	09H				
INPUT SELECT COMPUTER 2	02H	03H	00H	00H	02H	01H	02H	0AH				
INPUT SELECT COMPUTER 3	02H	03H	00H	00H	02H	01H	1AH	22H				
INPUT SELECT COMPONENT	02H	03H	00H	00H	02H	01H	10H	18H				
INPUT SELECT VIDEO 1	02H	03H	00H	00H	02H	01H	06H	0EH				
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H				
INPUT SELECT VIEWER	02H	03H	00H	00H	02H	01H	1FH	27H				
INPUT SELECT NETWORK	02H	03H	00H	00H	02H	01H	20H	28H				
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H						
PICTURE MUTE OFF	02H	12H	00H	00H	00H	14H						
SOUND MUTE OFF	02H	13H	00H	00H	00H	15H						
ON SCREEN MUTE ON	02H	14H	00H	00H	00H	16H						
ON SCREEN MUTE OFF	02H	15H	00H	00H	00H	17H						
ASPECT RATIO (4:3 Screen)												
4:3	03H	10H	00H	00H	05H	18H	00H	00H	00H	00H	30H	
LETTERBOX	03H	10H	00H	00H	05H	18H	00H	00H	01H	00H	31H	
WIDESCREEN	03H	10H	00H	00H	05H	18H	00H	00H	02H	00H	32H	
ZOOM	03H	10H	00H	00H	05H	18H	00H	00H	03H	00H	33H	
ASPECT RATIO (16:10 or 16:9 Screen)												
4:3 WINDOW	03H	10H	00H	00H	05H	18H	00H	00H	00H	00H	30H	
LETTERBOX	03H	10H	00H	00H	05H	18H	00H	00H	01H	00H	31H	
WIDESCREEN	03H	10H	00H	00H	05H	18H	00H	00H	02H	00H	32H	
4:3 FILL	03H	10H	00H	00H	05H	18H	00H	00H	03H	00H	33H	
AUTO ADJUST	02H	0FH	00H	00H	02H	05H	00H	18H				

**Cable Connection****Communication Protocol:**

Baud Rate: 38400 bps (for cable lengths longer than 20', it is recommended changing to 9600 bps in setup menu)

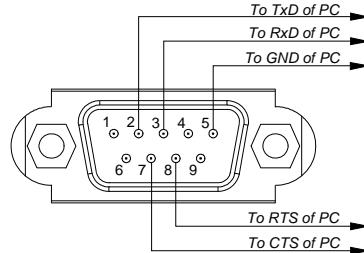
Data Length: 8 bits

Parity: No Parity

Stop Bit: One bit

X on/off: None

Communications: Full duplex

**PC Control Connector (D-Sub 9P)**

**NOTE:** Pins 1, 4, 6, and 9 are used inside the projector.

Jumper "Request to send" and "Clear to Send" together on both ends of the cable to simplify cable connection.